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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/809,043	03/16/2001	Nobuo Aoi	0819-0524	5601

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EXAMINER	
TOLEDO, FERNANDO L	
ART UNIT	PAPER NUMBER
2823	

DATE MAILED: 06/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/809,043	AOI, NOBUO	
	Examiner	Art Unit	
	Fernando Toledo	2823	

-- The MAILING DATE of this communication appears n the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 April 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-10,13 and 18-24* is/are pending in the application.

4a) Of the above claim(s) *1-4* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6-10,13,18,19,21 and 24* is/are rejected.

7)☒ Claim(s) *20,22 and 23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 March 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

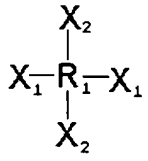
> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 6 – 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Brown et al. (U. S. patent 5,962,113).

In re claim 18, Brown in the U. S. patent 5,962,113; figures 1 – 8 and related text discloses polymerizing first cross-linking molecules having a three-dimensional structure and second cross-linking molecules having a two-dimensional structure to form an interlayer dielectric film composing a three-dimensionally polymerized organic polymer having a number of molecular pores (Columns 3 and 4).

2. In re claim 6, Brown teaches wherein the first cross-linking molecules are first organic molecules having a three or more sets of functional groups in one molecule, the second cross-linking molecules are second organic molecules having two sets of functional groups in one molecule, and the three-dimensionally polymerized organic polymer is formed by binding the three or more sets of functional groups of each of the first organic molecules and the two sets of functional groups of each of the second organic molecules together (columns 3 – 7).

3. In re claim 7, Brown discloses the first organic molecules are represented by [chemical formula 1]

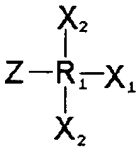


(wherein R_1 is a first organic skeleton, X_1 is a first set of functional groups, and X_2 is a set of a second set of functional groups, X_1 and X_2 being same or different type), the second organic molecules are represented by [chemical formula 2]

$$Y_1—R_2—Y_2$$

(wherein R_2 is a second organic skeleton, Y_1 is a third set of functional groups, and Y_2 is a fourth set of functional groups, Y_1 and Y_2 being same or different in type), the three-dimensionally polymerized organic polymer is formed by binding the first set of functional groups and the third set of functional groups together and binding the second set of functional groups and the fourth set of functional groups together, and the molecular level pores are formed in regions surrounded by the first organic skeleton and the second organic skeleton (Columns 3 – 7).

4. In re claim 8, Brown discloses the first organic molecules are represented by [chemical formula 3]



(wherein R_1 is a first organic skeleton, X_1 is a first set of functional groups, and X_2 is a set of a second set of functional groups, and Z is a third set of functional groups, X_1 and

X_2 being same or different type), the second organic molecules are represented by

[chemical formula 4]

$$Y_1—R_2—Y_2$$

(wherein R_2 is a second organic skeleton, Y_1 is a fourth set of functional groups, and Y_2 is a fifth set of functional groups, Y_1 and Y_2 being same or different in type), the three-dimensionally polymerized organic polymer is formed by binding the first set of functional groups and the fourth set of functional groups together and binding the second set of functional groups and the fifth set of functional groups together, and then binding the third set of functional groups of the several units together and the molecular level pores are formed in regions surrounded by the first organic skeleton and the second organic skeleton (Columns 3 – 7).

5. In re claims 9 and 13, Brown teaches forming a barrier film on the interlayer dielectric film (column 2); forming a mask on the surface of the barrier film (column 8); forming a concave portion in the surface of barrier film and the interlayer dielectric film by etching the surface barrier film and the interlayer dielectric film using the mask (column 8); and forming an interconnection made of a metal material by filling the concave portion with the metal material (column 8).

6. In re claim 10, Brown teaches wherein the first cross-linking molecules are first organic molecules having three or more sets of functional groups in one molecule (column 6); the second cross-linking molecule are second organic molecules having two sets of functional groups in one molecule (column 7), and the three dimensionally polymerized organic polymer is formed by binding the three or more sets of functional

groups of each of the first organic molecules and the two sets of functional groups of each the second organic molecules together (columns 7 and 8).

7. In re claim 19, Brown teaches wherein the three-dimensionally polymerized organic polymer has a unit with a diamond structure (Column 3).

8. In re claim 21, Brown teaches wherein the three-dimensionally polymerized organic polymer has a basket-like structure (Column 3).

9. In re claim 24, Brown teaches wherein the first organic molecules are benzene derivatives (Column 3).

Response to Arguments

10. Applicant's arguments filed 21 April 2003 have been fully considered but they are not persuasive for the following reasons.

11. Applicant argues that Brown does not posses a three-dimensional structure.

Examiner respectfully submits that polymers have a three-dimensional structure especially long-chain polymers, which, also posses benzene rings. Also, all polymers have mass and occupy space and hence have three dimensions. Therefore, Brown's organic polymers have three-dimensional structures.

12. Applicant contests that the interlayer insulating film of the presently claimed invention is an organic polymer, i.e., it includes no inorganic component such as silicon.

Examiner respectfully submits that an organic polymer is a long carbon-chain compound, which can posses various inorganic components attached to it. By the

definition stated in page 9 of Paper No. 11, an organic polymer would not posses oxygen, hydrogen, bromine, nitrogen, etc.; which are also in Applicant's compound.

If Applicant intended to exclude inorganic components, then, it is noted that the features upon which Applicant relies (i.e., the absence of inorganic components in a polymer) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Objections

13. Claims 20, 22 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fernando Toledo whose telephone number is 703-305-0567. The examiner can normally be reached on Mon-Fri 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7382 for regular communications and 703-308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

George Fourson
Primary Examiner
Art Unit 2823

FToledo
June 19, 2003